

RENAL TRANSPLANTATION. CLINICAL - 1

FP883 SERUM CALCIFICATION PROPENSITY IS ASSOCIATED WITH RENAL RESISTANCE INDEX AND MORTALITY AFTER RENAL TRANSPLANTATION

Ute Eisenberger¹, Stefan Farese², Ivo Bergmann², Anja Bienholz¹ and Andreas Pasch²

¹University Hospital Essen-Duisburg, Nephrology, Essen, Germany, ²University Hospital Bern, Nephrology, Bern, Switzerland

Introduction and Aims: Death with a functioning graft due to cardiovascular disease is the one of the most important issues in renal transplantation. Medial arterial calcification is accelerated in patients with chronic kidney disease and closely associated with arterial stiffness and mortality. Recently, we developed a novel in vitro blood test that provides an overall measure of calcification propensity by monitoring maturation time (T 50) of calciprotein particles in serum. The current study elucidates clinical and hemodynamic factors influencing calcification propensity and analyses the value of T50 measurements for prediction of patient and graft survival after renal transplantation.

Methods: We measured T50 in a prospective single centre cohort of 198 renal transplant patients with a follow-up of 5 years. Mean time after transplantation at study

inclusion was on average 7 years. T 50 measurements were performed using a Nephelostar nephelometer (BMG Labtech, Offenurg, Germany) as previously described (Pasch et al. JASN 2012). Renal resistance index was measured by color-coded duplex ultrasound. All hemodynamic and laboratory measurements were performed at study inclusion.

Results: At baseline the major determinants for tertiles of T50 included higher serum phosphate ($p<0.001$), lower transplant function ($p<0.001$) and serum albumin ($p<0.01$), higher HbA_{1c} ($p<0.05$) and total cholesterol ($p<0.01$), higher pulse pressure ($p<0.05$), systolic blood pressure ($p<0.05$) and renal resistance index ($p<0.05$) as well as the use of Calcineurin inhibitors ($p=0.02$). In a multivariate analysis, increased serum calcification propensity was independently associated with higher serum phosphate ($p<0.001$), lower serum albumin ($p<0.005$), higher HbA_{1c} ($p<0.05$), total cholesterol ($p<0.05$) and interestingly with use of Calcineurin inhibitors ($p<0.05$). Patient and graft survival divided by tertiles of T50 has been negatively associated with highest calcification propensity corresponding to the lowest tertile of T50 (log rank $p=0.03$, $p=0.02$, respectively). The lowest tertile of T50 revealed a more than 3 times increased relative risk for mortality compared to the highest tertile.

Conclusions: Our results suggest that serum T 50 is associated to established and new cardiovascular risk markers such as renal resistance index. T 50 may be a valuable biomarker to evaluate cardiovascular mortality risk in renal transplantation and might guide adjusted therapy in the future.